

Claims

1. Orientation device (2, 3, 17) for surgical use, said device comprising:
 - a. a frame (35, 15, 39) including at least one feature (12, 40, 22, 15) which is oriented with at least one reference (7, 5, 27, 41);
 - b. an orientation means (6) attached to the frame; characterized by the fact that said orientation means (6) are adapted to define a reference plane.
2. Orientation device (2, 3, 17) of claim 1, wherein the orientation means (6) is a two-dimensional level device.
3. Orientation device (2, 3, 17) of claim 2, wherein the level device is a bubble level.
4. Orientation device (2, 3, 17) of one of claims 1 or 2, wherein the level device is an electronic level.
5. Orientation device (17) of any one of claims 1 to 4, wherein at least one reference is a point on or associated with a pelvis and another reference is a plane of an operating table.
6. Orientation device (17), wherein two references are the antero superior iliac spines (7).
7. Orientation device (17) of one of claims 5 or 6, wherein the device has adjustable feelers (22) so as to permit calibration of the device to reference points (7) on the pelvis.
8. Orientation device (3), wherein the frame (15) is a pin and the feature is a thread (36) which is screwed into the pelvis and fixed against rotation with respect thereto and wherein the reference is a point (13) on the pelvis at which the thread enters the pelvis.
9. Orientation device (2) of one of claims 1 to 4, wherein the frame (35) has a distal end adapted to hold a surgical implement (4, 37, 5, 14), a proximal end adapted to be held by an operator's hand or by a robot arm, and a linear pointing means (8) for pointing to at least one reference point (7) associated with a patient, and wherein an

implement fixing means (36, 11) is disposed on the distal end of the frame for fixing the frame to said implement.

10. Orientation device (2) according to claim 9, wherein said linear pointing means
5 comprises a laser pointer (38) adapted to aim at said reference point (7), said laser and instrument shaft being parallel.
11. Orientation device (2, 3, 17) according to any one of claims 1 to 9, wherein said orientation means (6) is adjustable.
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12. Orientation device (2, 3, 17) according to any one of claims 9 or 11 wherein said implement fixing means (11) is adapted to allow a quick fixation or release of the device (2) to/from the implement (5).
13. Orientation device (2) according to any one of claims 9 to 12, wherein said linear pointing means (11) comprises a shaft (8) with a free distal end adapted to aim at said reference point (7), said guide shaft (8) and instrument shaft being parallel.
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14. Orientation device (2) according to any one of claims 9 to 12, wherein said linear pointing means comprise a laser beam adapted to aim at said reference point (7), said laser beam and instrument shaft being parallel.
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15. Orientation device (2) according to any one of claims 9 to 14, to be used with an acetabular prosthetic cup instrument (4) having a distal end for receiving either a reamer or a cup positioner, said linear pointing means being adapted to aim at a reference point (7) fixed to, or being part of, the pelvis.
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16. Orientation device (2) according to claim 1 to 4, 9 to 14 comprising left hip orientation means (10) for orientating said device (2) with respect to the left hip and right hip orientation means (9) for orientating said device (2) with respect to the right hip.
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17. Orientation device (2) for surgical implement (5), said orientation device comprising:
a. a frame (35) having a distal end adapted to hold the surgical implement, a proximal end adapted to be held by an operator's hand or by a robot arm, and a linear pointing means (8) for pointing to at least one reference point (7) associated with a patient;
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- b. implement fixing means (36) disposed on the distal end of the frame for fixing the frame (11) to said implement (5);
- c. orientation means (6) attached to the frame, characterized by the fact that said orientation means (6) are adapted to define a reference plane.

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18. Guide (2) for surgical instrument (4) made of a shaft having a distal end adapted to hold a surgical implement and a proximal end adapted to be held by a surgeon hand or by a robot arm, said guide (2) comprising
- instrument fixing means (11) for fixing said guide (11) to said instrument (8,5),
 - 10 - linear pointing means (8) for pointing at least one reference point (7) associated with a patient,
 - orientation means (6), characterized by the fact that said orientation means (6) are adapted to define a reference plane.
- 15 19. Guide according to claim 18 wherein said orientation means (6) are adjustable.
20. Guide according to claim 18 or 19 wherein said instrument fixing means (11) are adapted to allow a quick fixation or release of the guide (2) to/from the instrument (4).
- 20 21. Guide according to any one of claims 17 to 19 wherein said linear pointing means comprise a shaft (8) with a free distal end adapted to aim at said reference point (7), said guide shaft (8) and instrument shaft being parallel.
22. Guide according to any one of the previous claims 18 to 21 wherein said linear
- 25 pointing means comprise a laser pointer adapted to aim at said reference point (7), said laser pointer and instrument shaft being parallel.
23. Guide according to any one of claims 18 to 22 adapted to be used with an acetabular prosthetic cup instrument (4) having a distal end for receiving either a reamer or a cup
- 30 positioner, said linear pointing means being adapted to aim at a reference point (7) fixed to, or being part of, the pelvis.
24. Guide according to claim 23 comprising left hip orientation means (10) for orientating said instrument (4) with respect to the left hip and right hip orientation means (9) for
- 35 orientating said instrument (4) with respect to the right hip.

25. Kit for acetabular prosthetic cup positioning comprising a guide (4) as defined in any of claims 8 or 9 and a pelvic positioner (17), said pelvic positioner (17) comprising two arms (20) with respective feelers (22) and orientation means (19).
- 5 26. Kit for acetabular prosthetic cup positioning comprising a guide (2) as defined in any one of the previous claims 23 or 24 and/or a pelvic positioner (17) as defined in claim 24, said kit furthermore comprising a pelvic orientation witness (3) which comprises pelvic fixing means (15) for fixing said pelvic orientation witness (3) to the pelvis (13) and orientation means (16).
- 10 27. Assembly made of the guide (2) and the instrument (4) as defined in claim 22 or 23, said assembly comprising an angle measuring device for measuring the angle between ASIS and HJC.
- 15 28. Calibrating apparatus (23) for calibrating a guide (2) and an instrument (4) as defined in the previous claims 22 to 26, said calibrating apparatus (23) comprising angle reproducing means for reproducing the angle between ASIS (7) and HJC as measured with the device of claim 12.
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